Audit of the District's Year 2000 Compliance Planning

Audit #97-13

Prepared by
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TABLE OF CONTENTS

INTRODUCTION

The District maintains a complex technology infrastructure that consists of personal computers, workstations, minicomputers, and servers for data sharing, printing and application program support. The District's computer systems communicate through the use of a Wide Area Network that allows information and applications to be shared electronically across the entire organization. In order for this infrastructure to continue to function accurately into the twenty-first century, it must be year 2000 compliant.

The purpose of this audit was to review the District's planning to become year 2000 compliant. This review included information systems technology such as computer hardware, software, databases and the communications of data both internally with staff and externally with the general public. Additionally, other related technology such as the alarm systems, telephones, and data collection equipment that could be impacted was considered.

BACKGROUND

On Saturday, January 1, 2000, systems that use computer based technology to calculate date dependant information may generate incorrect results. It's called "the year 2000 problem" and can impact mainframe computers, personal computers, telephone systems, credit cards, transportation scheduling, security access, elevators, fuel dispensing, etc. The problem is not limited to individual businesses. It includes local, state, federal and international systems.

Why and how? The reason "why" is simple. Since the early 1970's, the use of a two-digit year, MM/DD/YY, for computer information has been a common practice. In many systems the two-digit year, YY, is "hard wired" or "hard coded" into date dependent computer related hardware and software systems. These systems cannot differentiate between 1900 and 2000. The "how" is a combination of expectations and bad habits. The hardware and software designed in the 70's and 80's were not expected to still be in use in the year 2000. In addition, system design engineers and programmers fell into the habit of using the two-digit year primarily to save storage space and simplify systems. The year 2000 problem is not necessarily technically complex. It is, however, labor intensive and pervasive.

Computer based systems that are not year 2000 compliant may produce errors in both financial transactions and human resource activities. However, the risks go well beyond the traditional financial arena. Without year 2000

compliant systems, the integrity of data base, data collection, and operational records may come into question. The following represent a few illustrative examples of potential risks in non-traditional areas:

Data Storage - any "old" data flagged for permanent storage with the year “99" as an expiration date could be automatically deleted and "current" data not retained,

Permitting - date errors in the permit data base could result in errors in permit issuance,

Data Collection - data used in legally mandated reports could not be reconciled to the actual date of collection, and

Operationally - incorrect telemetry data readings could result in poor operational decisions that could impact facilities or the public.

On March 23, 1997, the District's Director of Enterprise Engineering and Chief Information Officer directed a memorandum to the District's Executive Council members formally requesting that they initiate planning and budgeting for year 2000 compliance activities. Each Department/Office is expected to develop plans and budgets to specifically address any technical problems affecting their area of responsibility that may result from the millennium change.

With the budget planning process nearly complete for FY 1997-98 and the time frame for compliance limited, it is time to finalize these plans, assess risk, and bring the District's technology up to year 2000 compliance standards.

OBJECTIVES, SCOPE, AND METHODOLOGY

The purpose of this audit was to review the District's planning for becoming year 2000 compliant to ensure that:

, the District has conducted a review of its use of information technology, prepared an appropriate inventory, and adequately assessed potential and specific year 2000 problems for the:

- < Ross Payroll/Human Resources Information System,
- < AMS Local Government Financial System,
- < District developed Oracle databases,
- < In-house developed computer applications,
- < Vendor provided packaged software,
- < Operating systems: PC's, workstations, network, and mainframes,
- < Data sets (on-line and historic) used by the District or provided to others, and
- < Data sets provided to the District by others.

, the District's plan includes specific timing and budgeted costs,

, vendor supplied software is certified by the vendor as year 2000 compliant (or if not yet compliant, anticipated compliance date) and a standard has been developed to ensure that all new software purchased or developed is year 2000 compliant. Perform compliance test to validate vendor claim,

, the District has sufficient skills to undertake and complete the planned year 2000 initiatives, including validation testing, in the required time and/or will use outside resources to complete its year 2000 plan and whether such resources are already under contract, and

, the District's year 2000 compliance plan includes computer controlled devices, such as (but not limited to) the telephone system, security access cards, automated fuel dispensing, and data collection equipment.

The methodology used in performing our audit included:

- Researching and documenting current best practices for year 2000 compliance including planning and cost associated with implementation.

- Administering a standardized questionnaire that we developed to interview managers and key technology support staff responsible for District year 2000 compliance.

- Reviewing and evaluating, to the extent that it has been done, tests of District hardware and software for year 2000 compliance.

This audit was conducted in accordance with "generally accepted government auditing standards" as promulgated by the Comptroller General of the United States. In addition, we were guided by the "Standards for Information Systems Auditing" as developed by The Information Systems Audit and Control Foundation Standards Board. Fieldwork done for this audit was initiated on April 16, 1997, and concluded on June 24, 1997.

FINDINGS AND RECOMMENDATIONS

District staff is aware of the potential technical problems associated with the transition to the next century, responsibilities have been assigned to staff members, and some budget estimates have been developed to address problem resolution. Plans for year 2000 compliance for the major financial and human resource systems are being implemented. Plans for the major database systems are being developed. Other District applications and databases need to be inventoried and assessed. Furthermore, the District needs to obtain positive assurance from its vendors that their products are year 2000 compliant. District contracts and purchase orders should contain year 2000 compliance language.

The District does not have a formal written year 2000 planning document. A year 2000 plan would include awareness, assessment (inventory), renovation (conversion), validation (testing), and implementation. The District staff is currently working on an overall comprehensive plan.

Since the District has continued to maintain contemporary computer hardware and software, has sufficient information systems skills to manage a year 2000 project, and has time remaining to execute a plan, the District is in a good position to transition to the year 2000 with minimum risk.

Ross Payroll/Human Resource Information System (the "Ross System")

The Ross System is utilized District-wide for the maintenance and processing of payroll, human resource/benefits, affirmative action, and training records. The release version of this system that the District is currently using is not year 2000 compliant. The Systems Integration Division is in the process of installing and testing release version 5.7, which is year 2000 compliant. The projected date for implementation of release 5.7 is August of 1997. Most of the custom COBOL computer programs, custom reports, and job control procedures have been rewritten to accommodate the year 2000 changes.

The payroll module of the Ross System generates a computer file that is electronically transferred to Barnett Bank for deposit of employee paychecks. In addition, hours worked by leased employees are maintained and electronically transferred to the vendor, Southeastern Resources, from the Ross System.

Recommendation:

(1) Develop specific plans for any changes to the interface with both Barnett Bank for electronic deposit of paychecks and with Southeastern Resources for transfer of time sheet information for leased employees.

Management Response:

Management concurs with recommendation.

Responsible Division/Department: Systems Integration/MSD.
Estimated Completion Date: January 1999.

AMS Local Government Financial System (the "AMS System")

The AMS System is utilized District-wide for accounts payable, fixed assets, inventory, procurement, revenue accounting, and general accounting. The current version of this system is not year 2000 compliant.

A new version that is year 2000 compliant, v2.0, will be tested in 1997 and early 1998. It is recommended that in order to fully test new versions of business applications prior to the millennium transition, business applications be converted and implemented by December 31, 1998. Accordingly, the implementation of the year 2000 compliant system, which will require the rewrite of approximately 11 COBOL programs, 82 job control procedures, and 267 custom reports, is scheduled to be complete by the end of calendar year 1998.

Recommendation:

(2) In keeping with year 2000 practices for financial systems, the staff should follow their plan of completing the installation and testing of the year 2000 compliant version of AMS by December 31, 1998.

Management Response:

Management concurs with recommendation.

Responsible Division/Department: Systems Integration/MSD.
Estimated Completion Date: December 1998.

District Developed Oracle Databases

The Office of Enterprise Engineering maintains an inventory of all production databases. Production databases are collections of records containing information utilized in the normal course of business operations that have met the District's standards for software development. These records are utilized by related database application programs that are used to update, analyze, or provide reports based on the contents of these records.

The most significant efforts in terms of cost and time for the District to become year 2000 compliant will be in the following: conversion of the *date format* for existing database records, re-coding of the database application programs (where necessary), and making changes required to bring non-compliant versions of Oracle software up to compliant release levels. In addition, not all Oracle databases are in the "production" inventory. Some local databases that need conversion exist at the division (or department) level and may not be listed in the production inventory.

Budget estimates for compliance conversion have been developed for the District's two largest databases, hydrologic data and permits. The hydrologic database is the largest and contains information that is widely used by District staff. Several departments depend on the information in this database for their projects and daily activities. The Hydrologic Database is also a source of information for other organizations and the public. The Permits Database is critical to the operations of the Regulation Department and enables the department to fulfill legally mandated responsibilities.

Other databases, such as land management, water chemistry, weed control, computer inventory, budget, and Computerized Maintenance Management System, (CMMS) exist in the Oracle format. These databases should be included in the District's overall compliance planning tasks.

Some older versions of Oracle software products (referred to as "mature" products) that are not year 2000 compliant are still being used. However, the “current Oracle product range is designed to be year 2000 compliant.”[1]

Recommendations:

(3) Review and document databases not considered part of the District's production database inventory for inclusion in the compliance plans as part of the overall inventory of District Oracle software applications.

Management Response:

Management concurs with the recommendation. This activity is underway. It should be noted that not all of the District's production databases are Oracle based.

Responsible Division/Department: The Project Management Division will coordinate the associated activities with other departments.
Estimated Completion Date: March 1998.

(4) In addition to budget estimates developed for the Hydrologic and the Permits Database, include the cost for all Oracle databases in a formal District-wide year 2000 database compliance plan.

Management Response:

Responsible Division: The Project Management Division will include estimates of the costs required to make our Oracle databases that are not year 2000 ready in the plan.
Estimated Completion Date: December 1997.

(5) As part of the year 2000 project plan, bring the appropriate District Oracle products up to the current software release levels. Convert and test Oracle database applications to run at current compliant software release levels.

Management Response:

Management concurs with the recommendation.

Responsible Division: The Project Management Division will include estimates of the costs required to make our Oracle databases that are not year 2000 ready in the plan.
Estimated Completion Date: On going, December 1999.

(6) Test applications that were developed with year 2000 compliance already included in the specifications, such as CMMS and budget, but have not been actually tested with FY 1999/2000 data and dates.

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: The Project Management Division will coordinate this activity with other departments.
Estimated Completion Date: December 1998.

In-house Developed Computer Applications

The District program developers utilize commercial compilers and other utility software as tools in the development of in-house applications. In-house developed applications are programs written to support tasks or functions of a specific unit, division, or department. These applications are custom in nature and can range from complex engineering models to less complex word processing or spreadsheet macro code. A complete inventory of all in-house developed computer applications does not exist.

Recommendations:

(7) Review all District provided compilers and developmental utility programs for year 2000 compliance issues. If necessary, to resolve potential problems, bring compilers and utility software up to current release levels. Consider alternative products where the commercial provider does not provide a year 2000 compliant product.

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: The Infrastructure Management Division will coordinate this activity with other departments.
Estimated Completion Date: September 1999.

(8) Solicit from District computer users a complete list of in-house applications utilized in their normal course of work activities. From this user generated list develop an in-house application program inventory. Review each application to see if it is year 2000 sensitive (i.e. utilizes date fields and/or date calculations). Convert and test in-house developed applications.

Management Response:

Management concurs with the recommendation. The in-house applications will be prioritized and then checked for year 2000 readiness

Responsible Division/Department: The Project Management Division will coordinate this activity with other departments.
Estimated Completion Date: December 1999.

Vendor Provided Package Software and Operating Systems

The District does have various lists of vendor provided commercial software and operating systems. These lists contain operating systems (VMS, Solaris, Windows 95, OS/2, Mac OS), communications software (Netscape, Eterm32, etc.), office automation products (Office 97, Office Accelerator, Word Perfect, Lotus1-2-3, etc.), specialized applications (SAS, AutoCAD, Framemaker, etc.), business/administrative packages (CMMS, ISP, TRAKS, etc.), GIS (Arc/Info, Arcview, etc.) and remote sensing (ERDAS).

Most of the District's major computer hardware and software vendor's products claim to be year 2000 compliant. These vendor products include the operating system software for the District's main hardware platforms: VMS for DEC mainframes, Solaris for SUN Workstations, and Windows 95 for PC's. **(See Recommendation 16.)**

Data Sets Used by the District or Provided to Others

The District's on-line data sets are, for the most part, Oracle databases and financial/human resource data that will be converted to a year 2000 compliant form as discussed previously. These on-line data sets are routinely copied to magnetic tape to provide disaster recovery protection.

The current plan for historic financial and human resource data is to maintain copies of the old non-compliant versions of the Ross and AMS systems to process historic data from magnetic tape.

The District routinely provides electronic data to other organizations. These organizations include the United States Army Corps of Engineers, United States Geologic Survey, Barnett Bank, Everglades National Park, and state colleges/universities. This data is provided to facilitate operations, satisfy contractual obligations, or as part of meeting legally mandated "public records" requirements.

Recommendations:

(9) The year 2000 plan needs to insure that the form of the date data in the Oracle database migration of the various applications includes processes that when applied to historic data utilizes the four digit year for data storage, processing, and reporting.

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: The Project Management Division will coordinate this activity with other departments.
Estimated Completion Date: March 1998.

(10) The data backup and recovery systems utilized for on-line data sets, including the Oracle databases, Ross/AMS data, and other data located on file servers, must be considered a high priority issue in the year 2000 compliance planning. Each backup and recovery system should be tested for compliance.

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: The Infrastructure Management Division will coordinate this activity with other departments.
Estimated Completion Date: October 1998.

(11) In order to avoid the additional cost of maintaining two production versions of the Ross and AMS Systems, both historic human resources and financial data should be converted to the "new" year 2000 compliant format. Since the District often needs to make comparison runs of data from different fiscal years, this would allow the processing of both current and/or historic data with a single version of either system.

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: Systems Integration/MSD
Estimated Completion Date: December 1998.

(12) Since computer data is provided to "others" (outside of the District), steps should be taken to inventory our regular customers, notify them of any new data formats, and provide a planned date for any changes.

Management Response:

Management concurs with the recommendation.

Responsible Division: The Project Management Division will coordinate this activity.
Estimated Completion Date: December 1998.

Data Sets Provided to the District by Others

The District receives and uses computer output provided by the United States Geologic Survey, SPOT Satellite Images, United States Army Corps of Engineers, National Weather Service and County Tax Assessors. Since our providers are faced with the same year 2000 problems as the District, formats of data or methods of delivery may change.

Recommendation:

(13) Complete an inventory of data that is routinely delivered to the District through a computer link, CD ROM (compact disk read only memory), or magnetic media (tape or disk) for processing on District computers and determine if the data is year 2000 sensitive. Utilizing the resulting list of data providers with year 2000 sensitive data, contact each to determine their plans for any changes in the data format, their target date for these changes, and include any corresponding changes as tasks in the District's year 2000 project plan.

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: The Project Management Division will coordinate this activity with other departments.
Estimated Completion Date: December 1998.

District's Plan and Budget

District planning and budgeting for the year 2000 parallels the efforts of other government entities. Some have been quicker than others to initiate a program to address the issue.

In fact: Federal, State and Local governments have been assessing systems and developing plans to resolve the potential problems with their systems with mixed success. In a September, 1996 United States Congressional survey of twenty-four (24) agencies only nine (9) had developed a year 2000 plan and only seven (7) had developed cost estimates.[2] In March, 1997 the Director of the Office of Planning and Budget for the State of Florida provided a report to the House and Senate on the "Year 2000 Task Force Initial Assessment." He estimated the FY 1997-98 year 2000 compliance cost at $14 million for the "executive branch [State] agencies" with the condition that agencies staff "do not have to perform any new computing tasks," which results in an additional internal reassignment cost of $15 million.[3] In May 1997 the Palm Beach County computer system director said that, "the year 2000 problem will cost at least $1.4 million to fix." A Palm Beach County Commissioner stated that, "We've been warned by the industry if our repairs aren't under way by June of this year, we could crash."[4]

The Joint Legislative Auditing Committee for the State of Florida directed the State Auditor General's office to do " . . . an assessment of the potential impact of the year 2000 on State Government Information Technology, including the associated costs and plans of action that State agencies intend to use in this regard . . ."[5] In addition, AIn recognition of this situation, the Governor and Cabinet adopted a resolution *[see Appendix A]* acknowledging the year 2000 problem and directing State agencies to work with the Information Resource Commission in solving the problem.@[6]

The District is currently working on an overall comprehensive plan for the year 2000.

Each Department/Office has been asked to evaluate the scope of the problem and develop their plans with oversight and some resource support provided by the Office of Enterprise Engineering. Our survey of the departments, revealed that written year 2000 project plans do not exist at the Department/Office level. Two departments have project outlines with some supporting narratives, and one has a draft matrix of year 2000 tasks with estimated completion dates.

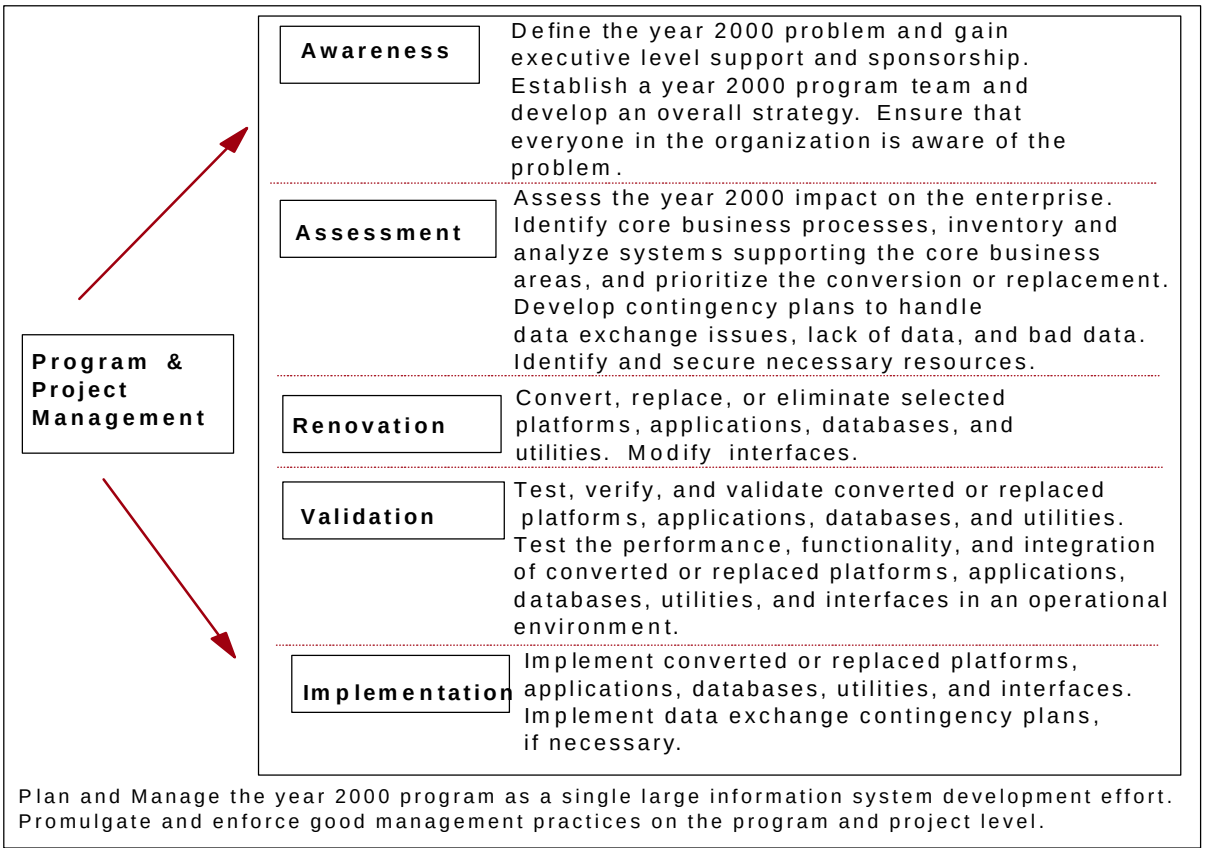
The FY 1997-98 District budget contains a program element "Year 2000 Compliance", Lk08, for the purpose of budgeting and accumulating of costs associated with this project. Approximately $562,000 has been budgeted toward year 2000 compliance as follows:

FY 1997-98: YEAR 2000 COMPLIANCE BUDGET		
Department or Division*	Budget Element(s)	Budget Total
Systems Integration Division	Lj04	$20,000
Technical Projects Management Division	Lk08	$250,000
Regulation Department	Bd02,Ha02,Hb02,Lk08	$50,000
Data Management Division	Lk08	$225,000
Chemistry Laboratory	Lk08	$17,000
*Information provided by OEE Budget Staff	TOTAL	$562,000

These figures and estimates will become more meaningful when District-wide assessment and planning is concluded. The plan can be modeled after other plans already being utilized by other agencies.

The following chart, Year 2000 Conversion Model, is from a United States General Accounting Office report.[7] The five basic elements of the conversion model are: awareness, assessment, renovation, validation and implementation.

Year 2000 Conversion Model



"The most important <u>single</u> step an organization can take, in preparation for documenting the impact that the year 2000 problem will have, is to <u>inventory</u> its entire Information Technology enterprise."[8]

The assessment phase, where a complete inventory of all hardware, software, and data is completed, becomes the basis for assessing overall risk, sizing the problem, prioritizing work, establishing cost, and scheduling activities.

If the assessment phase could be completed by September 1997 and the renovation phase started in October 1997, the District would have two full fiscal years to complete the renovation, validation, and implementation phases. This schedule would provide a three-month "cushion" from October 1, 1999 until December 31, 1999 to resolve any unexpected problems.

Recommendations:

(14) All funding that is required to update District technology that is directly related to solving a "year 2000 problem" should be budgeted under the same code, Lk08.

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: The Budget Office will coordinate this activity with the departments.
Estimated Completion Date: September 1997.

(15) The District should immediately develop a year 2000 project plan. The infrastructure for supporting the plan should include: upper level manager(s) sponsorship, a project manager, a support team of Information Systems professionals from across the District, and quarterly status reporting to the District's Executive Management Group.

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: The Office of Enterprise Engineering will coordinate this activity.
Estimated Completion Date: December 1997.

Vendor Software Certified, Tested, and Standards Established

Letters requesting year 2000 compliance certification from District computer software/hardware vendors have not been requested. These written vendor certifications need to include: current status of their efforts to make their product year 2000 compliant, if already compliant the version or release level of the compliant product, if not compliant the proposed release date of the compliant version, and cost for the compliant version.

There have been some limited tests of District's computer software/hardware for compliance, but no formal testing process, including documentation of tests, has been established.

With one exception, the contract for the new Computerized Maintenance Management System, District purchase orders and software contracts do not include language requiring year 2000 compliance. We provided the Office of Counsel and the Procurement Division with standard year 2000 compliance contract/warranty language including the language recommended by the State of Florida Information Resources Commission.

Recommendations:

(16) For existing District purchased computer hardware and software, request written vendor certification that each product is year 2000 compliant and perform on-site tests to validate the vendor's compliance claims.

Management Response:

Management concurs with the recommendation.

Responsible Division: Project Management Division will coordinate this activity.
Estimated Completion Date: December 1998.

(17) For new procurement, District staff should immediately begin to include year 2000 language in contract documents for software development and in purchase order specifications for hardware and software purchase requests. Additionally, new or renewal of service/maintenance contracts for computer controlled devices should include language that would require the service provider to certify year 2000 compliance or provide a compliant solution.

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: Project Management Division will coordinate this activity with the Office of Counsel and Procurement Division.
Estimated Completion Date: September 1997.

Sufficiency of Skills and Use of Outside Resources

The skill level to undertake and complete the year 2000 initiative exists within the District. These skills are distributed among the District personnel in various Departments and Offices. However, because of the magnitude and limited time for completion, this project will require contracted staff to supplement the total resources for this project. There are no resources currently under contract specifically to support a year 2000 initiative.

It has been reported that as we approach the year 2000 the demand for contracted resources will exceed the availability and the "costs are expected to increase by 30-50 percent per year as the deadline approaches."[9] Contracting for supporting resources will be critical to the success of the project.

Recommendation:

> **(18) "Contracted or leased" information systems professionals whose responsibilities and tasks would be directed and supported by the individual team members should supplement the District year 2000 project team.**
>
> Management Response:
>
> Management concurs with the recommendation.
>
> Responsible Division/Department: District -wide.
> Estimated Completion Date: On going, December 1999.

Planning for Computer Controlled Devices & Data Collection Equipment

There are no District plans in place to address the potential problems with computer controlled devices. The existing telephone and Audix (voice mail) systems are currently under review by the Office of Enterprise Engineering for a possible upgrade or replacement. These systems were installed in November of 1988 with a projected ten-year replacement. The security access card system is under contract for service and support. The automated fuel dispensing system will need to be included in any review of computer controlled devices.

There are other computer controlled devices such as the B-1 building environmental control system, the closed circuit TV security system, and

various building intrusion alarm systems (across the District) that need to be considered in the assessment of potential technology risk areas for the year 2000 problem.

Over the past several years the District has made efforts to modernize data collection equipment with the replacement of the old analog data recorders with digital recorders. The new digital recorders the District has installed utilize a four-digit date field for the year. These recorders should not be impacted by the millennium change.

The telemetry system "date/time stamps" the data sent or received based on a single source for time and date information. The date and time is generated by the operating system on the computers that support telemetry operations.

Recommendations:

(19) All District computer controlled devices, beyond what is normally considered "computer hardware and software," must be included in the overall "inventory assessment phase" of the District's year 2000 plan.

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: General Services/MSD.
Estimated Completion Date: January 1998.

(20) Include the year 2000 compliance contract/warranty language in any purchase order or request for proposals for upgrade or replacement of the Audix or telephone system(s).

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: The Project Management Division will coordinate with Office of Counsel and Procurement Division.
Estimated Completion Date: September 1997.

(21) The computers and operating system used for data collection and operational control of the telemetry system should be vendor certified and tested for year 2000 compliance.

Management Response:

Management concurs with the recommendation.

Responsible Division/Department: This activity will be coordinated by Electronics Support & Data Acquisition Division and the Operations & Maintenance Department.
Estimated Completion Date: September 1999.

CONCLUSIONS

The District is very fortunate that it has:

- skilled Information System support staff in several Departments/Offices,
- maintained relatively current and potentially compliant computer hardware and software tools,
- built an organizational awareness of the problem, and
- established a FY 1997-98 year 2000 Compliance project budget, Lk08.

District staff should move ahead with the development of the District's year 2000 compliance planning by defining the supporting infrastructure team and completing the "assessment phase" of the project. To ensure that the assessment is complete, each Department or Office needs to participate in the inventory of the hardware, software, and computer controlled devices that support work activities in their areas. The year 2000 compliance plan should, however, be managed “as a single large information systems development effort.”[10]

The question of maximum time for this project is controlled by the problem itself. It must be completed by December 31, 1999. However, since the assessment phase is not complete and there is no formal written action plan, the cost for the project could exceed current budget estimates.

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ENDNOTES

[1]"White Paper: Oracle Products and Year 2000 Compliance," Oracle Worldwide Customer Support, Web Page. p.1-25.

[2]"Year 2000 Conversion Summary of Oversight Findings and Recommendations," (House Report 104-857), Committee on Government Reform and Oversight, U.S. Government Printing Office, September 27, 1996.

[3]"Year 2000 Task Force Initial Assessment: March 1997," Office of Budget and Planning, State of Florida, March 25, 1997.p.1.

[4]"County Facing Computer Flaw of $1.4 Million," Palm Beach Post, May 6, 1997, p.3B.

[5]"Review of the Year 2000 Impact on State Government Information Technology," Auditor General's Office, State of Florida, December 5, 1996. p.v.

[6]Auditor General's Office, State of Florida. p.5

[7]"Year 2000 Computing Crisis: An Assessment Guide," United States General Accounting Office, Accounting and Information Management Division, February 1997, p.5.

[8] Auditor General's Office, State of Florida. p.14.

[9]Auditor General's Office, State of Florida. p.17.

[10]United States General Accounting Office. p.5.

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GLOSSARY

These definitions were developed by the staff or were drawn from the "Free On-line Dictionary of Computing," by Denis Howe, 1996, Web page and from the "Year 2000 Computing Crisis: An Assessment Guide", United States General Accounting Office, Accounting and Information Management Division, February 1997.

AMS *(AMS system or LGFS)*

American Management Systems, Inc. is a software development and marketing company located in Fairfax, Virginia. The District utilizes the AMS Local Government and Financial System for financial/administrative management.

Application Program *(Or "application")*

A complete, self-contained program that performs a specific function directly for the user. This is in contrast to system software such as the operating system, which exists to support application programs.

Assessment (for year 2000)

The process of assigning cost and time estimates to the technology inventory in order to meet year 2000 compliance requirements.

Backup

A spare copy of a file or file system, usually kept on magnetic tape or other removable medium, for use in the event of failure or loss of the original file.

COBOL (COmmon Business Oriented Language)

A programming language for simple computations on large amounts of data designed for business applications. The natural language style is intended to be largely self-documenting.

Crash

A sudden, usually drastic failure of a computer system as a result of a hardware or software problem.

Compiler

A specialized utility program that converts a program written in a common programming language (source code) to machine language (object code).

Database

One or more large structured sets of data, usually associated with software to update, search, sort, report, and /or analyze the data.

Data Set

A computer data file or collection of related data files.

Hardware

The physical, touchable, material parts of a computer or other system. The term is used to distinguish these fixed parts of a system from the more changeable software or data components.

Inventory (for year 2000)

The process of determining the components that comprises the District's information systems portfolio. The inventory should include all applications, databases, files, and related systems components that will require inspection to locate date data and related date computations.

Job Control Procedures

Instructions to guide the computer through various phases of a sequence of computer activities related to the running of an application program or series of programs.

Macro

A process of recording keystrokes and/or menu commands that is similar to programming. Macro programming features are provided in most word processing and spreadsheet programs and can be used to create short cuts or to automate frequently used processes.

Microcode

A technique for implementing the instruction set of a computer processor as a sequence bit fields (zero's and one's). Each bit field controls some specific part of the processor's operation. Programming at the processor computer chip level.

Operating system *(OS)*

The low-level software, which schedules tasks, allocates storage, handles the interface to peripheral hardware and presents a default interface to the user when no application program is running.

Oracle (*or Oracle database(s))*

Oracle Corporation is primarily a database software development and marketing company located in Redwood Shores, California. The District utilizes the Oracle relational database management system, RDBMS, software.

Platform

Specific computer hardware. It may also refer to a specific combination of hardware and operating system.

Recovery

The process of restoring computer data file with a backup copy usually after a crash or accidental deletion of a file.

Ross

Ross Systems, Inc. is a software development and marketing company located in Redwood, California. The District utilizes the Ross Human Resource and Payroll System. Also referred to as the Ross system or HR/PR.

Software

Computer programs, as opposed to the computers on which they run (the "hardware").

Test

The process of exercising a product to identify differences between expected and actual behavior. Typically testing is bottom-up: unit test, integration test and finally system test.

Wide Area Network (WAN)

A computer communications network used to access information with a link over distances of more than one kilometer. Networks that cover a smaller area such as a complex of buildings are called a Local Area Network, LAN. Multiple Local Area Networks can be interconnected through a Wide Area Network.

Year 2000 Compliant

Information systems able to accurately process date data (including but not limited to, calculating, comparing and sequencing) from, into, and between the twentieth and twenty-first centuries, including leap year calculations.

Year 2000 Problem ("The Millennium bug", "Y2K", "Turn of the Century problem")

The potential problems and its variations that might be encountered in any level of computer hardware and software from microcode to application programs, files, and databases that need to correctly interpret year-date data represented in 2-digit-year format.

Year 2000 Sensitive

Computer data files that contain year-date data represented in 2-digit-year format or computer programs that utilize 2-digit-year data to perform date calculations and/or make logical decisions.

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Appendix A

RESOLUTION, State of Florida

WHEREAS, information is a strategic asset and a valuable resource of the State of Florida; and

WHEREAS, the State of Florida depends upon its computer systems to manage information resources and to accomplish its business functions with accuracy and speed;

WHEREAS, many of the State's systems rely upon accurate date calculations to perform a myriad of required functions;

WHEREAS, Florida, along with the rest of the world, faces a significant problem with computer system software that will not function properly after December 31, 1999, because the technology will not recognize the century change;

WHEREAS, without a way to recognize the century change, information in the State's computer systems will be interpreted inconsistently and date calculations will be performed incorrectly, representing a serious threat to the State's ability to conduct its business and serve the public;

WHEREAS, Florida's State Strategic Plan for Information Resources Management, as approved by the Governor and Cabinet on February 27, 1996, has established a goal that by January 1, 1999, all state agencies will have identified and corrected all computer programs that will not function properly when the year 2000 is reached;

WHEREAS, even without regard to the challenges posed by the year 2000, many of our computer programs and systems are in need of both extensive modernization and conversion to a common, state-wide standard;

WHEREAS, state agencies will incur significant costs in attempting to make these obsolete systems function properly when the year 2000 is reached;

WHEREAS, the challenge of preparing for the year 2000 presents the State with a limited window of opportunity to resolve both the year 2000 problem and the difficulties now being faced due to inadequacies in many of the State's current systems;

WHEREAS, because the year 2000 date change is fast approaching, time is of the essence if the State is to take advantage of this opportunity to both prepare for the century change and update essential state information systems; and,

WHEREAS, state agencies can facilitate the resolution of both of these problems by undertaking a thorough assessment of the impact of the year 2000 date change on its computer systems, developing a project work plan, identifying resources required for that plan, and identifying systems in need of modernization beyond year 2000 concerns;

NOW, THEREFORE, BE IT RESOLVED that the Governor and Cabinet of the State of Florida do hereby direct each state agency to:

1)Conduct a thorough assessment of the impact of the year 2000 date change on all computer systems, applications, and networks to identify systems that require modifications to process correctly, or that should be replaced or discarded;

2)determine whether replacement of a given system, application or network would be economically and technologically feasible, based on the existence of an effective, cost-efficient replacement that would meet the State's standards for sharing common information;

3)develop a Year 2000 Project work plan that identifies additional resources, with estimated costs, that will be required to ensure completion of all project tasks, including systems testing, by January 1, 1999;

4)provide a summary of the assessment results and a copy of the agency's Year 2000 Project work plan, with its resource requirements, to the Information Resource Commission by January 1, 1997.

BE IT FURTHER RESOLVED that the Information Resource Commission staff is directed to provide consultation to executive agencies on methods to help avert adverse impacts of the date change problem and to provide quarterly updates to the Commission as to the State's progress toward achieving year 2000 date compliance in its computer systems

Appendix B

*AUDIT QUESTIONNAIRE - SUMMARY**

Q.1 Have you been advised of the Year 2000 issues?
Yes: 34 (97%) ***No: 1 (13%)***

Q.2 Have you assigned the "Year 2000 project" to someone on your staff?
Yes: 26 (81%) ***No: 6 (19%)***

Q.3 Has a "Year 2000 project" plan been established?
Yes: 5 (17%) ***No or Working on a plan: 24 (83%)***

Q.4 Has the problem been inventoried?
Yes: 13 (50%) ***No: 13 (50%)***

Q.5 Has a timetable been set (FY97/98, FY98/99, or Both)?
Yes: 11 (52%) ***No: 10 (48%)***

Q.6 Has a Budget estimate been developed for Data Conversion, Human Resource needs (including contracted resources) and additional hardware/software capacity or requirements?
Yes: 12 (60%) ***No: 8 (40%)***

Q.10 How do you plan to deal with the problem?
A) Don't know at this time. ***1 (5%)***
B) Will defer until FY99.
C) Defer to Office of Enterprise Engineering. ***1 (5%)***
D) Waiting for a Plan. ***11 (58%)***
E) Working on Plan (or have a "plan"). ***5 (26%)***
F) Done. ***1 (5%)*** **Note: In reference to CMMS in O&M only.**

Q.17 Do you know of any vendor supported District Hardware or Software that is currently Year 2000 compliant?
Yes: 14 (67%) ***No: 7 (33%***)

Q.18 Have Year 2000 compliance letters/certifications been requested or received from the above Hardware or Software vendors.
Yes: 1 (8%) ***No: 12 (92%)*** **Note: "Yes" was a result of a contract condition in CMMS, but untested.**

Q.19 Have you tested the Year 2000 compliant "claim" by the vendors?
Yes: 1 (7%) ***No: 14 (93%)*** **Note: "Yes" to Ross system in SID only.(AMS system was "no".)**

Q.20 Can you demonstrate your compliance test?
Yes: 5 (36%) ***No: 9 (64%)*** **Note: No one actually demonstrated a test.**

*Not all those interviewed felt they could answer **all** the questions. Therefore, the responses to these selected questions represent only questions the interviewees felt comfortable or competent to answer.